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COR-0278  
Copy 5 of 5

15 December 1958

MEMORANDUM FOR : Special Assistant to the Director  
for Planning and Development

SUBJECT : CORONA Project Processor and Printer  
Evaluation

REFERENCE : Memo for Dir. of D&P, Subject: Ex-  
ploitation of Equipment for CORONA  
Photography dtd 4 Dec.1958 (COR-0252)

1. The capabilities and limitations of both the ITEK and EK equipments were looked into on the EK trip.

2. Two important points must be considered prior to proceeding with the discussion of the ELTRON and the DAYTON processor.

A. The man who evaluated both the ELTRON and DAYTON Processor [ ] is not CHALICE cleared, consequently, he did not understand our concept upon which the machines were built. His evaluation was based on his experiences as an Air Force officer on the same equipments at Westover AF Base prior to his retirement.

B. EK does not intend to use either the ELTRON or DAYTON processor on CORONA. They will use the SPELTRON processor. This machine because of its proprietary aspects was not shown to ITEK. With one exception, that of the emulsion side going over the rollers, the SPELTRON eliminates all the discrepancies noted by [ ] on the ELTRON and DAYTON Processors.

3. The SPELTRON processor (See Attachment)

NOTE: This sketch is not to be shown to other contractors:

- A. Keeps film wet during entire process (See A of Sketch)
- B. Views film under IR light and then passes it over a densitometer to establish need for further development (See B of Sketch).
- C. Passes film into Tank C on sketch. Depending on need for further processing, Tank C can be used to wash

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or continue development. This adjustment is done from a control panel at the Viewer's station. It is of interest to note viewing and minimum density readings take place prior to time film enters developer and fixing calls.

- D. Processes film in one continuous strip. No cutting required.

4. The SPELTRON processor design still permits the emulsion side to travel over alternate rollers throughout the system; however, this design disadvantage is easily remedied by using extreme care in maintenance and operation of the machine. No significant or discernible damage has been recorded by NSA on material processed at EK. To keep rollers from emulsion side, film must be turned by a series of angled rollers. With this base material this is dangerous because of problems in tracking. Losing a loop in a tank would most likely ruin considerable materials.

5. Reference is made to page 2 of 6 pages of [ ] letter. I am certain illumination changes of at least one order of magnitude as the vehicle passes over the target area from south to north will be discernible to only a densitometer. I don't believe failure to process to each of these small changes in light level will have any marked effect upon either quantity or quality of target information. Except at certain times of the year, keeping passes over target constant (i.e. noon) there will not be great variation in illumination. The SPELTRON machine can handle the problem adequately. In closing, the ITEX processor even if modified could not give this "optimum development". The ITEX processor is a machine that can process from 1'/min. to 25'/min. To do this, it must use concentrations of chemicals, both developer and fix, to handle the higher rate. Although rate of film flow can be changed strengths of chemicals remain the same. In brief, film flows through baths, particularly fix solutions, which may, because of improper concentration, be detrimental to image quality.

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6. Printers - EK has 3 printers,


- A. The 70 Mprinter which [ ] describes on page 5 of his draft;
- B. The EK-14 which has exposure control in the form of a flying spot scanner, and

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C. The Jr. Printer. Those printers which do not have an exposure control can still produce dupes of high quality by first, viewing the negatives with a densitometer, to establish density variations, then marking those areas of variation with electrical conducting strips which in turn would sound a buzzer on the printing machine alerting the printer operator to change his setting. It is granted this procedure is time-consuming but we are not concerned with quantity production. Resolution-wise, all the printers, ITEK and EK are capable of greater values than the lens system of the HYAC cameras. For example, the ITEK printer is capable of retaining values up to approximately 229 1/mm while the EK printers can produce resolutions of about 214 1/mm. As you know, the best calculated resolution for the HYAC lenses is 100 1/mm.


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R&D Officer

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DPS/DCI  :pf

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ATTACHMENT:

Orig only (Sketch of SPELTRON)